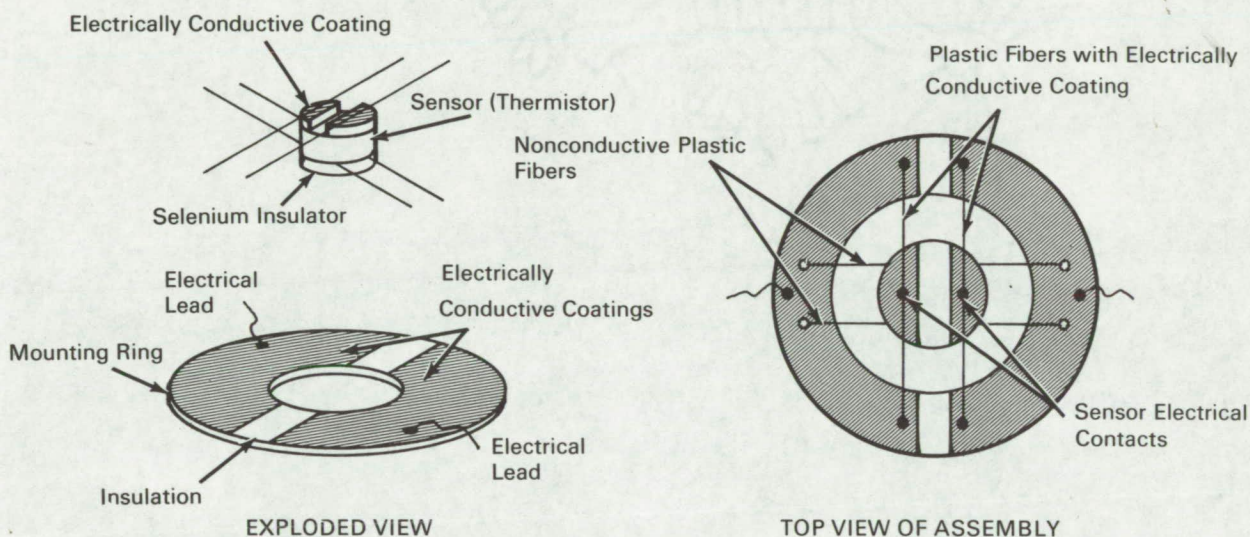


NASA TECH BRIEF



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Electrically Conductive Fibers Thermally Isolate Temperature Sensor



The problem:

To devise a rugged mounting that will provide thermal isolation and an electrical path for an unbacked thermal sensor.

The solution:

Suspend the sensor in the center of a plastic mounting ring from four plastic (e.g., acrylic resin) fibers, two of which are coated with an electrically conductive material and connected to electrically conductive coatings on the ring.

How it's done:

Two sections of the upper surface of the mounting ring, made of insulating material, are coated with an electrically conductive material. Two of the plastic fibers are partially coated with a thin electrically conductive film and are secured both to conductive coatings on the sensor and the two electrically conductive

sections of the mounting ring. Electrical leads to an external circuit are connected to these sections. Two untreated (nonconductive) fibers are secured to the underside of the sensor, which is then coated with a film of insulating material (e.g., selenium). The ends of these nonconductive fibers are secured to the mounting ring with a suitable adhesive.

Both pairs of fibers provide a vibration- and shock-proof support as well as thermal isolation for the sensor. The pair coated with an electrically conductive film offers a much higher thermal resistance than a solid conductor.

Note:

This type of sensor assembly may be permanently installed in large pieces of electrical equipment, such as in power stations, for temperature measurement under conditions where the time constant of the sensor is not critical.

(continued overleaf)

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Patent status:

Title to this invention has been waived under the provisions of the National Aeronautics and Space Act [42 U.S.C. 2457 (f)], to the Barnes Engineering Company, 30 Commerce Road, Stamford, Connecticut.

Source: Bruce Norton and Russel DeWaard
of Barnes Engineering Company
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